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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/429,297	10/28/1999	Masahiko Ogino	503.37770X00	5755

20457 7590 07/10/2002

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EXAMINER

MITCHELL, JAMES M

ART UNIT PAPER NUMBER

2827

DATE MAILED: 07/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/429,297

Applicant(s)

OGINO ET AL.

Examiner

James Mitchell

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-6, 9-14, 17 and 20-26 is/are pending in the application.
- 4a) Of the above claim(s) 18 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-6, 9-14, 17 and 20-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the amendment filed March 13, 2002.

Applicant's election without traverse of claims 2-6, 9-14, 17 and 20-26 in Paper No. 12 is acknowledged. Claims 18 and 19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 12.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2-6, 9-14, 17, and 20-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. With respect to claims 2-9 and 20, a stress relaxing layer, chip and protective film of the present invention make up a semiconductor device as illustrated by the claim language "semiconductor device comprising." It is ambiguous as to how side planes of the device, which are formed after being singulated are exposed outside of the device which they comprise.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 3, 10, 11 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (U.S 6,004,467) in combination with Ball (U.S 6,351,022).

7. Kim (Fig 1, 4, 5E) discloses a wafer and semiconductor device comprising a wafer (300) having a plurality of chip areas (310; Fig 4) comprising circuits and electrodes respectively and a semiconductor chip (310) that inherently possesses circuits and electrodes (shown in Fig 112) for communicating the chip with an external source, an inherent porous, stress release, Silicon dioxide layer (314; pores created by space within layer for pad) on a plane, a circuit layer ("trace" 322) provided on said stress relaxing layer and connected to an electrode ("I/O pad", 312) with an external terminal (330) provided on said circuit layer, via- holes (Column 4, Lines 11-16) provided between the electrodes on said chip and said circuit layer with conductive portions for electrically connecting said circuit layer and said electrode; wherein chip is inherently mounted with other components forming a module.

8. Kim does not appear to disclose an organic protecting film provided on the plane opposite to said stress relaxing layer, or that the side planes of the chip, said stress relaxing layer, and an organic protecting film respectively form peripheral edges of the stress relaxing layer and are exposed outside (understood to mean, edges free from an additional covering) of the semiconductor device on a same plane.

9. However, Ball utilizes an organic protecting film (24; Column 3, Lines 24-28)) on a front and backside of wafer.

10. It would have been obvious to one of ordinary skill in the art to form a protective film on a plane opposite to said stress relaxing layer of Kim (prior to wafer being segmented) in order to reduce breakage and cracking during handling of the structure as taught by Ball (Abstract).

11. Therefore said side planes of said stress relaxing layer, the semiconductor chip and the organic protecting film respectively would form peripheral edges of the stress relaxing and be exposed outside of the semiconductor device through a subsequent dicing process of Kim (shown in Fig 5E).

12. Claims 4, 12, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim and Ball as applied to claims 2 and 10 in further view of Chang et al (U.S 6,353,182).

13. Neither Kim nor Ball appear to disclose that the protecting film, stress relaxing layer, and adhesion layer have equivalent linear coefficients.

14. However, it would have been obvious to one of ordinary skill in the art to form the protective liner, stress relaxing and adhesion layers, which are in direct contact with the chip, with equivalent linear expansion coefficients (CTE) in order to eliminate warpage in the chip due to (CTE) mismatch as evidenced by Chang et al. (Column 1, Lines 64-65).

15. Claims 5, 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim and Ball as applied to claims 3 and 10 in combination with Fukutake (EP 0504669).

16. Neither Kim nor Ball appears to disclose that the porous, passivating stress relaxing layer is Polytetrafluoroethylene (PTFE).

17. However Fukutake utilizes a porous passivating PTFE layer (5; English Abstract).

18. It would have been obvious to one of ordinary skill in the art to form the porous, passivating, stress relaxing layer of the prior art with Polytetrafluoroethylene (PTFE) in order to eliminate thermal cracking as taught by Fukutake (Abstract).

Response to Arguments

19. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3230 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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July 9, 2002

David E. Graybill
DAVID E. GRAYBILL
PRIMARY EXAMINER